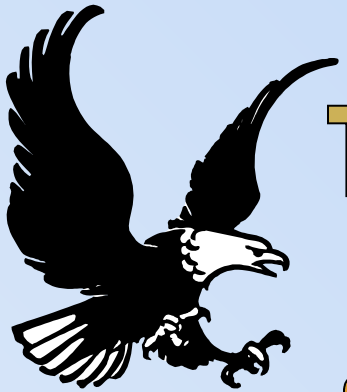


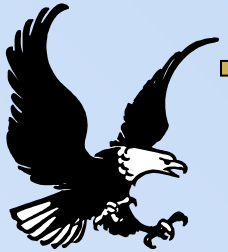
The Smarter Ambush

Security Solutions for an Unsafe World...

Types of Ambushes

- **Offensive**
  - **Infantry**
    - **Special Operations**
      (Snatch&Go, priority targets)
      - **Armored**
        - **Artillery**

- **Defensive Actions**
  - **Defend roads, gates, facilities**
    - **Retrograde cover**
      - **Counter-mine surveillance (road-side mines)**



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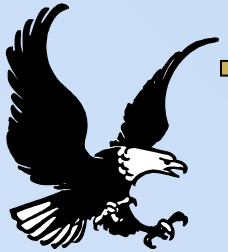
Ambush Issues

- Define warning/alert and kill zones
- Define approaches to and exits from the kill zone
- Track the number of enemy in each zone
- Track enemy reaction in each zone

Ambush Issues

- No one has the big picture
  - Limited Field of View
    - Limited Range
      - Limited Communications within ambush 'team'
- Count of those entering and leaving each zone
- Direction of travel into and out of each zone
- When to start and stop the action in each zone



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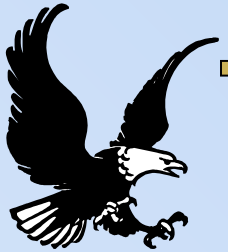
Ambush Issues

- **Designating targets to individual shooters**
  - **Minimize sound footprint and ammunition expended**
    - **Maximize lethality – “one round one kill”**
      - **Cut off retreat, kill from the outside in**
- **ID Friend, Foe, Non-combatants, animals (ignore)**
- **Sharing of situation information between team members**
- **Urban interface problem – who and where are the “neutrals”**

Ambush Issues

- **Wounded-where are they and how to get them back**
  - **Friendly**
    - **Enemy**
- **Define non-lethal exclusion zones**
- **Survivors – where are they, where are they going?**



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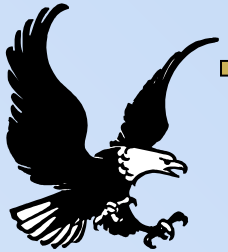
Technology Insertion

1. **Computer Vision**

2. **Thermal and Night Sites**

3. **Distant Vital Sign Monitoring (Active & Passive Millimeter Wave Radar)**



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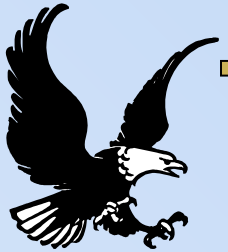
1. Why Computer Vision (Video Early Warning)?

- **Precise definition of rules of engagement**
  - **Kill zones**
    - **Enemy counts entering, in and leaving each zone**
      - **Warning zones**
        - **Electronic ‘trip’ wires**
- **Unlimited number of other rules**
  - **Can learn by example**
  - **Can be trained to alert to man down**



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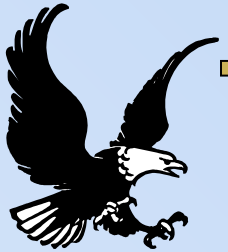
1. Why Computer Vision (Video Early Warning)?

♦ **Compensate for human factors: fatigue, boredom, understanding, inattention**

♦ **Track & display multiple targets**

♦ **Alert to user selected changes in conditions**

♦ **Continuous monitoring of each defined zone**



The Smarter Ambush

1. Why Computer Vision (Video Early Warning)?

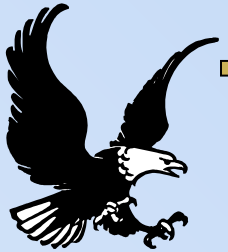
♦ **Not effected by: day, night, wind, rain, snow, smoke**

♦ **Send individual alerts to team members**

♦ **Can be modified to control a weapon (pan/tilt/fire)**

♦ **Use a mix of thermal, day & night sites & cameras**

♦ **Monitor manned and unmanned cameras**



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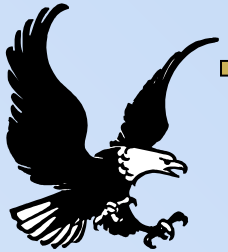
2. Why thermal sites and cameras?

- **Passive-no signal to detect**
- **Long Range (.5-16 KM) to detect man sized targets**
- **Not effected by or changes in light/smoke conditions**
- **Not effected by camouflage**
- **Can be augmented by day and**



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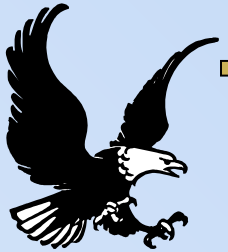
3. Why Distant Vital Sign Monitoring?

- **Passive and/or Active MM Wave Radar Technology**
- **All weather (altimeter technology)**
- **'Through the wall' searches**
- **Locate wounded and concealed troops WITHOUT physically searching the kill zone.**
- **GPS location for both device and**



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QUESTIONS??

1.After Panel

2. BOOTH 524

3.Clancy McQuigg
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